



# NMDCAT

## FULL LENGTH PAPER-6

### HALF SYLLABUS - 2

Total MCQs: 200

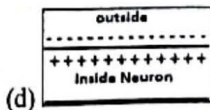
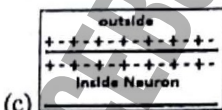
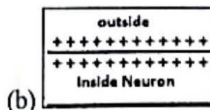
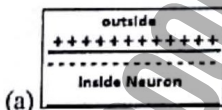
Max. Marks: 200

## BIOLOGY

- Q.1** The only mode of gaseous movement in plant body is:  
 (a) Diffusion (b) Facilitated transport  
 (c) Osmosis (d) Active transport
- Q.2** In the ascent of sap, water moves up in the:  
 (a) Xylem (b) Cambium  
 (c) Phloem (d) Endodermis
- Q.3** All plants do not possess:  
 (a) Lenticels (b) Cuticle  
 (c) Stomata (d) Chlorophyll
- Q.4** Which of the following arteries are not the direct branches of aorta?  
 (a) Iliac arteries (b) Coronary arteries  
 (c) Femoral arteries (d) Renal arteries
- Q.5** Least blood pressure can be observed in:  
 (a) Aorta (b) Inferior vena cava  
 (c) Renal veins (d) Jugular vein
- Q.6** Which vein has oxygenated blood?  
 (a) Renal vein (b) Pulmonary vein  
 (c) Subclavian vein (d) Jugular vein
- Q.7** The thickest chamber of human heart is:  
 (a) Left atrium (b) Right atrium  
 (c) Left ventricle (d) Right ventricle
- Q.8** The lymphatic vessels of the body empty the lymph into blood stream at the:  
 (a) Abdominal vein (b) Jugular vein  
 (c) Subclavian vein (d) Bile duct
- Q.9** Antibodies are proteins and made up of how many polypeptide chains?  
 (a) One (b) Three  
 (c) Two (d) Four
- Q.10** The lymph vessel of villi is called:  
 (a) Epithelium (b) Adrenals  
 (c) Afferent lymph vessel (d) Lacteal
- Q.11** Which of these is not true regarding Bursa of Fabricius?  
 (a) It produces B cells in humans (b) It is a lymphoid structure  
 (c) B cells were discovered from it (d) B cells get mature in it
- Q.12** Which of these links two heavy and two light chains of an antibody molecule?  
 (a) Disulfide bridges (b) Glycosidic bond  
 (c) Peptide bond (d) Ionic bond
- Q.13** Blood passing through glomerulus is filtered into:  
 (a) Bowman's capsule (b) Collecting ducts  
 (c) Proximal tubules (d) Renal hilus
- Q.14** Which part of nephron is never permeable to water?  
 (a) Ascending limb of loop of Henle (b) PCT  
 (c) Descending limb of loop of Henle (d) DCT
- Q.15** What are three components of mechanism of homeostatic regulations?  
 (a) Receptors, control center and effectors (b) CNS, PNS and diffused nervous system  
 (c) Sensory, motor and associative neurons (d) Cerebrum, cerebellum and pons
- Q.16** Blood enters the glomerulus through:  
 (a) Efferent arteriole (b) Renal artery  
 (c) Afferent arteriole (d) Renal vein



- Q.17 Those nephrons which are present along the border of the cortex and medulla are called:  
(a) Juxtamedullary nephrons (b) Internal nephrons  
(c) Cortical nephrons (d) Outer nephrons
- Q.18 Those animals who are capable of production of varying degrees of endothermic heat but generally do not regulate their body temperature are called:  
(a) Heterotherms (b) Endotherms  
(c) Homeotherms (d) Ectotherms
- Q.19 Modified cell membrane of a skeletal muscle fibre is called:  
(a) Sarcolemma (b) Epimysium  
(c) Sarcomere (d) Neurilemma
- Q.20 After attaching, the cross-bridges of the myosin bend forward and the \_\_\_\_\_ is pulled along.  
(a) T-tubule (b) M-line  
(c) A-band (d) Actin filament
- Q.21 During muscle contraction:  
(a) I-band shortens (b) Actin filaments shorten  
(c) Myosin filaments shorten (d) Z-line disappears
- Q.22 The sarcolemma of muscle fiber folds inwards and forms a system of tubes which runs through the sarcoplasm called:  
(a) Myofilaments (b) Z-lines  
(c) Sarcoplasmic reticulum (d) Transverse tubules
- Q.23 The function of calcium ions in muscle contraction is to:  
(a) Bind to troponin molecule and cause them to move  
(b) Polarize visible light  
(c) Aid in the transmission of nerve impulse  
(d) Bind to tropomyosin molecule and cause them to form cross bridges
- Q.24 All of the following are examples of neurotransmitters except:  
(a) Acetylcholine (b) Dopamine  
(c) Adrenalin (d) Oxytocin
- Q.25 Collection of cell bodies of neurons outside the central nervous system is:  
(a) Cranial nerve (b) Motor area  
(c) Ganglion (d) Nerve fiber
- Q.26 Long dendron and short axon are characteristic feature of:  
(a) Sensory neuron (b) Motor neuron  
(c) Inter neuron (d) Associative neuron
- Q.27 Taste buds on the tongue are example of:  
(a) Thermoreceptors (b) Pressure receptors  
(c) Photoreceptors (d) Chemoreceptors
- Q.28 Which one of the following conditions best describes active membrane potential?



- Q.29 Which one of the following is exocrine as well as endocrine?  
(a) Liver (b) Thyroid  
(c) Adrenals (d) Pancreas
- Q.30 Hormones are the organic compounds of varying structural complexity. Which of the following is not a function or property of these compounds?  
(a) They initiate new biochemical reactions (b) They may be proteins  
(c) They are poured directly into blood (d) They affect target cells
- Q.31 Which one of the following is a precursor of steroid hormones?  
(a) Glycerol (b) Amino acids  
(c) Sterol (d) Cholesterol



- Q.32 Which of the following neurotransmitters lies outside the central nervous system?  
 (a) Serotonin (b) Acetylcholine  
 (c) Dopamine (d) Adrenaline
- Q.33 Which of the following hormone will be carried by blood vessel labeled 'X'?



- (a) STH (b) ADH  
 (c) TSH (d) FSH
- Q.34 Yellow glandular structure formed after the release of egg from follicle is called:  
 (a) Corpus callosum (b) Corpus luteum  
 (c) Graafian follicle (d) Follicle atresia
- Q.35 In which phase of menstrual cycle, endometrium is fully prepared for implantation of embryo?  
 (a) Proliferative phase (b) Secretory phase  
 (c) Menstrual phase (d) Ovulation phase
- Q.36 The ovaries are located:  
 (a) One on each side of the upper abdomen (b) Two on each side of the lower abdomen  
 (c) Two on each side of the upper abdomen (d) One on each side of the lower abdomen
- Q.37 Which of the following will happen if fertilization does not occur?  
 (a) Menopause starts (b) FSH secretion is increased  
 (c) Corpus luteum degenerates (d) Progesterone secretion is increased
- Q.38 Which of the following sequence is correct?  
 (a) LH → FSH → Estrogen → Progesterone (b) FSH → Estrogen → Progesterone → LH  
 (c) FSH → LH → Progesterone → Estrogen (d) FSH → Estrogen → LH → Progesterone
- Q.39 Discharge of ovum or secondary oocyte from ovary or from Graafian follicle is called:  
 (a) Fertilization (b) Follicle formation  
 (c) Pollination (d) Ovulation
- Q.40 Locus stands for:  
 (a) Position of gene on homologous chromosomes (b) Position of an allele within a DNA molecule  
 (c) Regions of chromosomes (d) Close regions of same chromosomes
- Q.41 In Mendel's dihybrid cross, how many seeds were heterozygous for wrinkled phenotype in F<sub>2</sub>?  
 (a) 0% (b) 33.33%  
 (c) 25% (d) 66.66%
- Q.42 The work of C. Correns was based on which phenomenon?  
 (a) Complete dominance (b) Incomplete dominance  
 (c) Co-dominance (d) Over dominance
- Q.43 \_\_\_\_\_ is the chance of an event to occur.  
 (a) Probability (b) Dominance  
 (c) Pleiotropy (d) Epistasis
- Q.44 \_\_\_\_\_ may produce many different alleles of a gene.  
 (a) Gene mutation (b) Gene transcription  
 (c) Gene expression (d) Gene interference
- Q.45 If a carrier woman for hemophilia is married to a normal man, then all of the following combinations can exist except:  
 (a)  $X^{H}X^{H}$  (b)  $X^{h}Y$   
 (c)  $X^{H}Y$  (d)  $X^{h}X^{h}$
- Q.46 An estimated diameter of super coiled chromatin fiber is:  
 (a) 10nm (b) 700nm  
 (c) 30nm (d) 200nm



- Q.47 A nucleosome consists of:
- Complex of 200 nucleotides and 8 histones molecules
  - Complex of 100 nucleotides and Variable histones molecules
  - Complex of 400 nucleotide pairs and 8 histones molecules
  - Complex of variable nucleotides and Variable histones molecules
- Q.48 During semi-conservative replication of DNA molecule, \_\_\_\_\_ structure of DNA remains conserved.
- Primary
  - Tertiary
  - Secondary
  - Quaternary
- Q.49 Elongation factor attaches aminoacyl-tRNA at:
- P-site
  - A-site
  - E-site
  - I-site
- Q.50 Nucleosome is an essential bio-molecule, associated with which cell organelle?
- Mitochondria
  - Nucleus
  - Chloroplast
  - Golgi complex
- Q.51 Modifications an organism acquires during its life time can be passed along to its offspring is called as:
- Origin of species
  - Law of natural selection
  - Law of inheritance of acquired characters
  - Principles of population
- Q.52 Which one is exact chronological appearance of different classes in fossil record:
- Fish → amphibians → mammals → reptiles → birds
  - Reptiles → birds → mammals → fish → amphibians
  - Fish → reptiles → mammals → birds → amphibians
  - Fish → amphibians → reptiles → mammals → birds
- Q.53 Cytochrome C is found in:
- All organisms
  - All aerobic species
  - All anaerobic species
  - All photosynthetic species
- Q.54 Analogous organs are:
- Different origin but similar functions
  - Different origin and different functions
  - Common origin but different functions
  - Common origin and common functions
- Q.55 Many identical copies of genes can be produced by:
- Gene sequencing
  - Gene cloning
  - Gene expression
  - Gene analysis
- Q.56 Restriction endonucleases do not cut bacterial DNA because:
- It is circular
  - It is methylated
  - It is specific
  - Palindromic sequences are not present
- Q.57 In hypercholesterolemia, patients lack a receptor for removing cholesterol from:
- Lymph
  - Glomerular filtrate
  - Blood
  - Blood cells
- Q.58 *Thermus aquaticus* is naturally lives in:
- Glaciers
  - Deep sea waters
  - Rocky Mountains
  - Hot springs
- Q.59 It is true about the primers used in PCR:

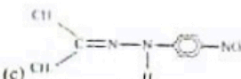
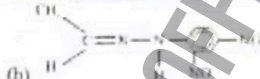
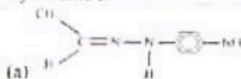
	Length of the Primer	Chemical Nature of the Primer	Attachment with Template DNA
(a)	10 nucleotides	DNA	5' end
(b)	20 nucleotides	DNA	3' end
(c)	20 nucleotides	RNA	3' end
(d)	10 nucleotides	RNA	5' end

- Q.60 Restriction enzymes can work only when they recognize their specific:
- Blunt ends
  - Sticky ends
  - Palindromic sequences
  - Multiple cloning site



- Q.61 The three-dimensional twisting and folding of the polypeptide chain results in the \_\_\_\_\_ structure of proteins.  
 (a) Primary (b) Tertiary  
 (c) Secondary (d) Quaternary
- Q.62 When Li burn in  $O_2$ , mainly gives \_\_\_\_\_  
 (a)  $LiO_2$  (b)  $Li_2O_2$   
 (c)  $Li_2O$  (d)  $LiOH$
- Q.63  $M + O_2 \longrightarrow MO_2$ , M may be in the given reaction  
 (a) K (b) Rb  
 (c) Na (d) Both (a) and (b)
- Q.64 Molten sodium burns in the atmosphere of Chlorine to form sodium chloride with a \_\_\_\_\_ flame  
 (a) Crimson red (b) Brilliant yellow  
 (c) violet (d) Reddish violet
- Q.65 Which of the following transition metals shows maximum paramagnetic behaviour?  
 (a)  $Fe^{2+}$  (b)  $Zn^{2+}$   
 (c)  $Mn^{2+}$  (d)  $Cu^{2+}$
- Q.66 Which of the following elements has lowest 1<sup>st</sup> ionization potential?  
 (a) Ar (b) P  
 (c) Cl (d) S
- Q.67 Which of the following compounds is more soluble in water?  
 (a)  $Ca(OH)_2$  (b)  $Mg(OH)_2$   
 (c)  $Ba(OH)_2$  (d)  $Sr(OH)_2$
- Q.68 Which of the following has biggest size after gaining one electron?  
 (a) O (b)  $N^{3-}$   
 (c) F (d)  $N^{3-}$
- Q.69 Which of the following is most non-metallic element?  
 (a) Nitrogen (b) Chlorine  
 (c) Oxygen (d) Fluorine
- Q.70 How many peptide bonds are present in pentapeptide?  
 (a) Three (b) Six  
 (c) Five (d) Four
- Q.71 Which intermediate compound is formed in the acid catalyzed dehydration of iso-propyl alcohol  
 (a)  $CH_3 - CH_2 - CH_2^+$  (b)  $CH_3 - CH^+ - CH_3$   
 (c)  $CH_3 - CH_2 - CH_2^+$  (d)  $CH_3 - CH^+ - CH_3$
- Q.72 Many enzymes contain a protein part and non-protein part. This protein part is \_\_\_\_\_  
 (a) Apoenzyme (b) Holoenzyme  
 (c) Co-factor (d) Co-enzyme
- Q.73 Ethanoic acid reacts with ethanol to give ethylacetate, the catalyst is  
 (a) Ethanol (b)  $HNO_3$   
 (c)  $H_2SO_4$  (d) Acetic acid itself
- Q.74 In the dimer of carboxylic acid how many oxygen atoms are present in the ring  
 (a) 1 (b) 4  
 (c) 2 (d) 3
- Q.75 Propanedioic acid is the IUPAC name of  
 (a) Malonic acid (b) Maleic acid  
 (c) Oxalic acid (d) Tartaric acid
- Q.76 The activity of enzymes is best at or around the temperature  
 (a)  $37^\circ C$  (b)  $40^\circ C$   
 (c)  $50^\circ C$  (d)  $25^\circ C$
- Q.77 Which of the following statement is correct about enzymes?  
 (a) They are specific in their action (b) They are protein in nature  
 (c) Most enzymatic reactions are reversible (d) All of these

- Q.78 Activators are the inorganic substances which increase the enzyme activity. The activator of carbonic anhydrase enzyme is  
 (a)  $\text{Fe}^{+2}$  (b)  $\text{Zn}^{+2}$   
 (c)  $\text{Mg}^{+2}$  (d)  $\text{Fe}^{+1}$
- Q.79 Enzyme catalytic reaction have the maximum rate at  
 (a) Low temperature (b) High temperature  
 (c) Low pH (d) Optimum temperature
- Q.80 Brick red precipitate are formed when aldehyde reacts with:  
 (a) Sodium borohydride (b) Fehling solution  
 (c) Sodium bisulphate (d) Formaldehyde
- Q.81 The structure of formula of the product of reaction of acetone with 2, 4-dinitrophenyl hydrazine is



- Q.82 2-Propanol on oxidation gives \_\_\_\_\_  
 (a) Aldehyde (b) Carboxylic Acid  
 (c) Ketone (d) Alcohol
- Q.83 Which compound forms white crystalline ppt with aldehydes and small methyl ketones  
 (a) 2,4 DNP (b) Ammonical  $\text{AgNO}_3$   
 (c) Sodium nitroprusside (d)  $\text{NaHSO}_3$
- Q.84 In Crotonaldehyde functional groups are  
 (a) Aldehyde and alcohol (b) Alcohol and ketone  
 (c) Alkene and aldehyde (d) Alkene and ketone
- Q.85 Isomerism exhibited by  $\text{CH}_3\text{COOH}$  and  $\text{HCOOCH}_3$  is  
 (a) Position (b) Chain  
 (c) Geometrical (d) Functional group
- Q.86 The process of cracking is developed to increase the yield of lower hydrocarbons which serves as  
 (a) Classification of organic compounds (b) Important fuels commercially  
 (c) Anti-knocking agents in fuel (d) Food items
- Q.87 Oxidation of an alkane in presence of very little oxygen yields  
 (a)  $\text{CO} + \text{H}_2\text{O} + \text{heat}$  (b)  $\text{C} + \text{CO} + \text{H}_2\text{O} + \text{heat}$   
 (c)  $\text{CO}_2 + \text{H}_2\text{O} + \text{heat}$  (d)  $\text{C} + \text{H}_2\text{O} + \text{heat}$
- Q.88 Addition of  $\text{HBr}$  to iso-butylene gives  
 (a) Primary alkyl halide (b) Secondary alkyl halide  
 (c) Tertiary alcohol (d) Neopentyl alcohol
- Q.89 Which of the following is used as a catalyst when benzene reacts with acetyl chloride to give acetophenone?  
 (a)  $\text{CCl}_4$  (b)  $\text{Ni}$   
 (c)  $\text{Al}_2\text{O}_3$  (d)  $\text{AlCl}_3$
- Q.90 Identify C in the following series  $\text{C}_2\text{H}_5\text{I} \xrightarrow{\text{alc KOH}} \text{A} \xrightarrow{\text{HBr}} \text{B} \xrightarrow{\text{KCN}} \text{C}$   
 (a)  $\text{Br}-\text{CH}_2-\text{CH}_2-\text{CN}$  (b)  $\text{CH}_3-\text{CH}_2-\text{CN}$   
 (c)  $\text{Br}-\text{CH}=\text{CH}-\text{CN}$  (d)  $\text{CH}_3-\text{CH}_2-\text{CH}_2-\text{CN}$
- Q.91 d-Block elements which show anomalous configuration in first series are  
 (a) Cr and Ni (b) Cu and Co  
 (c) Cr and Cu (d) Fe and Ni

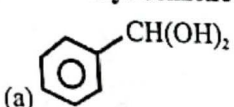
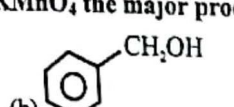
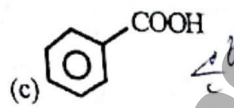
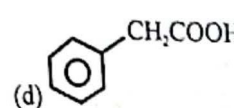
Q.92

the correct IUPAC name of above compound

- (a) 2-Hydroxybutanoic acid  
 (c)  $\alpha$ -Hydroxybutanoic acid

- (b) 3-Hydroxybutanoic acid  
 (d)  $\beta$ -Hydroxybutanoic acid



- 93 Which of the following is super oxide  
(a)  $\text{MgO}$   
(c)  $\text{BaO}_2$
- Q.94 Acetophenone can be produced by reaction of benzene with  
(a) Ethyl chloride  
(c) Propyl chloride
- Q.95 The n-Propyl alcohol and isopropyl alcohol can be distinguished by  
(a) Baeyer's test  
(c) Benedict's test
- Q.96  $2\text{CH}_3\text{COOH} \xrightarrow{\text{P}_2\text{O}_5} \text{CH}_3\text{COOOCCH}_3 + \text{H}_2\text{O}$   
The above reaction is  
(a) Addition reaction  
(c) Reduction
- Q.97 The lowest oxidation state of Fe is in which of the following compounds  
(a)  $\text{FeSO}_4 \cdot (\text{NH}_4)_2\text{SO}_4 \cdot 6\text{H}_2\text{O}$   
(c)  $\text{K}_4[\text{Fe}(\text{CN})_6]$
- Q.98 One of the following statements is not true in case of transition metals. Which is that  
(a) Variable oxidation states  
(c) All the ions form coloured complexes
- Q.99 Which compound reacts most rapidly by  $\text{S}_\text{N}2$  mechanism  
(a) Methyl chloride  
(c) Tertiary butyl bromide
- Q.100 Relative acidic strength of Alcohol, phenol, water and carboxylic acid is  
(a) Carboxylic Acid > alcohol > phenol > water  
(b) Carboxylic acid > phenol > water > alcohol  
(c) Alcohol > Phenol > Water > carboxylic acid  
(d) Phenol > water > alcohol > carboxylic acid
- Q.101 When ethyl benzene reacts with alkaline  $\text{KMnO}_4$  the major product is  
(a)   
(b)   
(c)   
(d) 
- Q.102 The colour of precipitate of 2,4,6-tribromophenol is  
(a) Red  
(c) Orange
- Q.103 Phenol reacts with  $\text{HNO}_3$  at  $100^\circ\text{C}$  the product is  
(a) 2,4,6-Trinitrophenol  
(c) o-Nitrophenol and p-Nitrophenol
- Q.104 Hybridization of carbonyl carbon is  
(a)  $\text{sp}^3$   
(c) sp
- Q.105 Which of the following test is used for both ketone and aldehyde?  
(a) Sodium nitroprusside test  
(c) Tollen's test
- Q.106 The addition of  $\text{HCN}$  to carbonyl compounds is an example of  
(a) Electrophilic addition  
(c) Nucleophilic substitution
- Q.107 Attacking nucleophile + alkyl halide  $\longrightarrow$  organic compound + Z. What is Z in above reaction  
(a) Hydronium ion  
(c) Halide ion



$\alpha-H, \beta-CH_3$

- Q.108 Which of the following does not give iodoform test  
(a)  $CH_3-CH_2-OH$  (b)  $(CH_3)_2-CH-OH$   
(c)  $CH_3-CH_2-CH_2-CH_2-OH$  (d)  $CH_3COCH_3$
- Q.109 How many grams of sodium react with ethanol to give one mole of hydrogen gas  
(a) 11g (b) 69g  
(c) 23g (d) 46g
- Q.110 Oxidation of acetone in the presence of  $K_2Cr_2O_7 / H_2SO_4$  produce  
(a)  $CH_3COOH, HCOOH$  (b) Only  $CH_3COOH$   
(c) Only  $HCOOH$  (d)  $CH_3COOK, HCOOK$
- Q.111 Hydrolysis of ethane nitrile with acidic solution gives  
(a) Formic acid (b) Methyl cyanide  
(c) Acetic acid (d) Acetamide
- Q.112 The flavour of ethyl butyrate is like  
(a) Orange (b) Pine apple  
(c) Apricot (d) Banana
- Q.113 Which one is not fatty acid  
(a) Ethanoic acid (b) Oxalic acid  
(c) Stearic acid (d) Palmitic acid
- Q.114 Which one is more acidic  
(a)  $CH_3COOH$  (b)  $Cl_2CHCOOH$   
(c)  $ClCH_2COOH$  (d)  $Cl_2CHCH_2COOH$
- Q.115 Ammonium acetate on strong heating gives  
(a) Urea (b) Acetic acid  
(c) Formamide (d) Acetamide
- Q.116 The charged electrophile is  
(a)  $Cl^+$  (b)  $OH^-$   
(c)  $BF_3$  (d)  $SO_3$
- Q.117 2-Butene  $\xrightarrow[\Delta]{KMnO_4/H^+} 2X$ . The X is  
(a) Ethanol (b) Ethanoic acid  
(c) Ethanal (d) Butylene glycol
- Q.118 Enzymes used in fermentation process is  
(a) Zymase (b) Hydrolase  
(c) Urease (d) Transferase
- Q.119 The pair of compounds cannot be distinguished by iodoform test  
(a) 2-methyl-2-propanol and ethanol (b) Methanol and ethanol  
(c) 2-butanol and 1-butanol (d) Ethanol and 2-propanol
- Q.120 By convention a peptide having molecular mass upto 10,000 amu is called  
(a) Amino acid (b) Protein  
(c) Polypeptide (d) Both "B" and "C"

## PHYSICS

- Q.121 To improve efficiency of transformer the flux coupling between primary & secondary coils should be  
(a) Small (b) Maximum  $\checkmark = 1 \quad 2$   
(c) May be small or may be maximum (d) None of these
- Q.122 Uniform electric field of strength  $1N/C$  is present in a certain region work done in moving a charge  $2C$  through a distance  $2m$   
(a)  $2J$  (b)  $4J$   $w = V \cdot q = \frac{W}{q} \quad \frac{J}{2} = \frac{W}{2}$   
(c)  $1J$  (d) Zero
- Q.123 A D.C battery of emf  $E$  and internal resistance  $r$  delivers maximum power to an external resistance  $R$ . The ratio  $R/r$  is  
(a)  $1:1$  (b)  $\sqrt{2}:1$   $IR$   
(c)  $1:\sqrt{2}$  (d)  $2:1$
- Q.124 The electron behave as a wave because  
(a) They can be diffracted by a crystal  
(b) They can be deflected by electric and magnetic fields  
(c) They can produce ions in gases  
(d) They can travel in straight line



- Q.125 A radioactive source contains 100,000 nuclei. How many nuclei decayed after three half lives  
 (a) 12,500 (b) 50,000  
 (c) 25,000 (d) 87,500
- Q.126 See/ohm is equal to  
 (a) Farad (b) Coulomb  
 (c) Joule (d) Ampere
- Q.127 If the potential difference across two plates of a parallel plate capacitor is doubled then energy  
 (a) Two times (b) Four times  
 (c) Eight times (d) Remains same
- Q.128 Which of given is correct relation for measuring the value of decay constant.  
 (a)  $\lambda = \frac{\Delta N}{N\Delta t}$  (b)  $\lambda = \frac{\Delta N\Delta t}{N}$   
 (c)  $\lambda = \frac{N}{\Delta N\Delta t}$  (d)  $\lambda = \frac{N\Delta N}{\Delta t}$
- Q.129 A three-dimensional image of remarkable quality can be achieved by modern versions called  
 (a) Scanning electron microscope (b) Scanning proton microscope  
 (c) Scanning electron telescope (d) Scanning electron spectrometer
- Q.130 The unit of emf is  
 (a) Ampere (b) Volt  
 (c) Weber (d) Tesla
- Q.131 The principle of an electric generator is based on  
 (a) Faraday's law (b) Coulomb's law  
 (c) Ampere's law (d) Lenz's law
- Q.132 The number of protons in the nucleus of uranium are  
 (a) 92 (b) 91  
 (c) 90 (d) Zero
- Q.133 When north pole moved away from coil then face of coil act as  
 (a) North pole (b) South pole  
 (c) Either A or B (d) Both a and b
- Q.134 Two parallel metal plates having charges +Q and -Q face each other at a certain distance between them. If the plates are now dipped in kerosene oil tank, the electric field between the plates will  
 (a) Remain same (b) Increase  
 (c) Become zero (d) Decreases
- Q.135 A photon in motion has a mass  
 (a)  $c/hv$  (b)  $h\nu$   
 (c)  $h/v$  (d)  $h\nu/c^2$
- Q.136 Half-life of a radioactive substance depends upon  
 (a) Temperature (b) Pressure  
 (c) Nature of substance (d) Electric and magnetic field
- Q.137 In 420 days, the activity of a sample of polonium (Po) fell to  $\frac{1}{8}$  th of its initial value. The half - life of polonium is:  
 (a) 140days (b) 280days  
 (c) 70days (d) 210days
- Q.138 The back ground radiation to which we are expose on the average per year is:  
 (a) 2 rem (b) 2Sv  
 (c) 2mSv (d) 3Sv
- Q.139 The cosmic radiation consist of:  
 (a) Low energy charged particles  
 (b) High energy charged particles  
 (c) High energy charged particles and electromagnetic radiation  
 (d) Low energy charged particle and e.m radiation



Q.140 1 rad = -----

- (a) 0.1 gary  
(c) 0.01 gary

- (b) 0.1 sievert  
(d) 0.01 sievert

Q.141 1 Sv =

- (a) 1 Gy x RBE  
(c) 2 Gy x RBE

- (b) 1 Gy/RBE  
(d) RBE/1 Gy

Q.142 Decay of one radioactive atom per second is equal to

- (a) One curie  
(c) One half-life

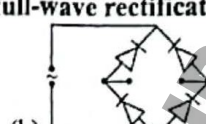
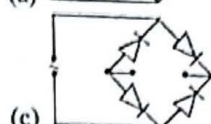
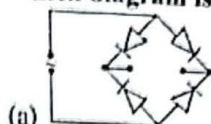
- (b) One Becquerel  
(d) One Henry

Q.143 According to uncertainty principle, in order to reduce uncertainty in momentum measurement, we must use light of

- (a) Higher frequency  
(c) Longer wavelength

- (b) Shorter wavelength  
(d) Both a & b

Q.144 Which diagram is the correct circuit for full-wave rectification?



Q.145 If an electron is accelerated through a potential difference of 54 volts, its de-Broglie wavelength will be:

- (a)  $1.66 \times 10^{-8} \text{ m}$   
(c)  $1.66 \times 10^{-10} \text{ m}$

- (b)  $1.66 \times 10^{-9} \text{ m}$   
(d)  $1.66 \times 10^{-12} \text{ m}$

$\lambda = 6.6$

Q.146 The number of coils are wound around an iron cylinder which is rotated in the magnetic field is called

- (a) slip rings  
(c) Commutator

- (b) Armature  
(d) Electromagnet

Q.147 The radioactivity of a certain radioactive element drops to 1/64 of its initial value in 30 seconds. Its half-life is

- (a) 2 seconds  
(c) 4 seconds

- (b) 5 seconds  
(d) 6 seconds

$1 \rightarrow \frac{1}{2} \rightarrow \frac{1}{4} \rightarrow \frac{1}{8} \rightarrow \frac{1}{16} \rightarrow \frac{1}{32}$

Q.148 Temperature coefficient of resistance ( $\alpha$ ) is equal to

(a)  $\frac{R_t + R_o}{R_o \Delta t}$

(b)  $\frac{R_o - R_t}{R_o \Delta t}$

(c)  $\frac{R_t - R_o}{R_o \Delta t}$

(d)  $\frac{R_o \Delta t}{R_t - R_o}$

$I_s V_s = I_p V_p$   
 $\frac{V_s}{V_p} = \frac{I_p}{I_s}$

Q.149 The ratio of the number of turns in primary and secondary coils of a transformer is 1:20. The ratio of the currents in the primary and secondary coils will be

- (a) 1 : 20  
(c) 1 : 400

- (b) 20 : 1  
(d) 400 : 1

$\frac{20}{1} = \frac{V_s}{V_p}$

Q.150 A charged particle of energy 15 eV moves through perpendicular magnetic field. The energy of the particle on emerging out of the magnetic field is

- (a) 15 eV  
(c) >15 eV

- (b) <15 eV  
(d) 15V

Q.151 The charging or discharging of a capacitor depends upon

- (a) Only resistance R  
(c) Product of resistance & capacitance

- (b) Only capacitance C  
(d) Current and resistance

Q.152 The electric force of repulsion between two electrons at a distance of 1m is:

- (a) 1.8 N  
(c)  $2.30 \times 10^{-28} \text{ N}$

- (b)  $1.5 \times 10^{-9} \text{ N}$   
(d)  $2.30 \times 10^{-30} \text{ N}$

Q.153 Resistivity is reciprocal of

- (a) Conductance  
(c) Induction

- (b) Conductivity  
(d) None of these



- Q.154 Law stating that "force is directly proportional to product of charges and inversely proportional to square of separation between them" is called  
 (a) Newton's law (b) Gauss's law  
 (c) Coulombs law (d) Ohm's law
- Q.155 Coulomb's Force is  
 (a) Adhesive Force (b) Force of friction  
 (c) Opposing Force (d) Mutual Force
- Q.156 A positively charged particle moving along x-axis with a certain velocity enters a uniform electric field directed along positive y-axis. Its  
 (a) Vertical velocity changes but horizontal velocity remains constant  
 (b) Both vertical and horizontal velocities change  
 (c) Horizontal velocity changes but vertical velocity remains constant  
 (d) Neither vertical nor horizontal velocity changes
- Q.157 A body can be negatively charged by  
 (a) Giving some protons to it (b) Giving excess of electrons to it  
 (c) Removing some electrons from it (d) Removing some neutrons from it
- Q.158 An electric field is created by two parallel plates. Which of the following points corresponds to the higher electric potential?



- (a) A (b) B  
 (c) C (d) The electric potential is the same at all points
- Q.159 Electric lines of force about negative point charge are  
 (a) Circular, anticlockwise (b) Radial, inward  
 (c) Circular, clockwise (d) Radial, outward
- Q.160 A charged particle travelling in a uniform field could have a circular trajectory if the field is  
 (a) Gravitational (b) Electrical  
 (c) Magnetic (d) Gravitational or electrical
- Q.161 What is the condition of an electromagnetic induction?  
 (a) There must be a relative motion between the coil of wire and galvanometer  
 (b) There must be a relative motion between galvanometer and generator  
 (c) There must be a relative motion between the galvanometer and a magnet  
 (d) There must be a relative motion between the coil of wire and a magnet
- Q.162 The total number of magnetic lines of force passing through a certain area perpendicular to a magnetic field is called  
 (a) Magnetic flux (b) Magnetic flux intensity  
 (c) Magnetic flux density (d) Magnetic potential
- Q.163 The magnetic flux through a wire loop in a magnetic field does not depend on  
 (a) The area of the loop  
 (b) The shape of the loop  
 (c) The magnitude of the field  
 (d) The angle between the plane of the loop and the direction
- Q.164 A square coil  $10^{-2} \text{ m}^2$  area is placed perpendicular to a uniform magnetic field of strength  $10^3 \text{ Wb/m}^2$ . The magnetic flux through the coil  
 (a) 10 weber (b)  $10^5$  weber  
 (c)  $10^{-2}$  weber (d)  $10^0$  weber
- Q.165 A step-down transformer is connected to 2400 volts line and 80 amperes of current is found to flow in output load. The ratio of the turns in primary and secondary coil is 20:1. If transformer efficiency is 100%, then the current flowing in primary coil will be  
 (a) 1600 A (b) 4 A  
 (c) 20 A (d) 1.5 A

- Q.166 Frequency of photon having energy 66 eV is  
 (a)  $8 \times 10^{15} \text{ Hz}$  (b)  $16 \times 10^{15} \text{ Hz}$   
 (c)  $12 \times 10^{15} \text{ Hz}$  (d) None of these
- Q.167 Ionization potential of hydrogen atom is 13.6 V. Hydrogen atoms in the ground state are excited by monochromatic radiation of photon energy 12.1 eV. The spectral lines emitted by hydrogen atoms according to Bohr's theory will be  
 (a) One (b) Three  
 (c) Two (d) Four
- Q.168 Wavelength of a 1 keV photon is  $1.24 \times 10^{-9} \text{ m}$ . What is the frequency of 1 MeV photon?  
 (a)  $1.24 \times 10^{15} \text{ Hz}$  (b)  $1.24 \times 10^{18} \text{ Hz}$   
 (c)  $2.4 \times 10^{20} \text{ Hz}$  (d)  $2.4 \times 10^{23} \text{ Hz}$
- Q.169 Energy of photon whose frequency is  $10^{12} \text{ MHz}$ , will be  
 (a)  $4.14 \times 10^3 \text{ keV}$  (b)  $4.14 \times 10^3 \text{ MeV}$   
 (c)  $4.14 \times 10^2 \text{ eV}$  (d)  $4.14 \times 10^2 \text{ V}$
- Q.170 The half-life of a radioactive element which has only  $1/32$  of its original mass left after a lapse of 60 days is  
 (a) 12 days (b) 60 days  
 (c) 32 days (d) 64 days
- Q.171 The half-life of polonium is 140 days. After how many days, 16 gm polonium will be reduced to 1 gm (or 15g will decay)  
 (a) 700 days (b) 560 days  
 (c) 280 days (d) 420 days
- Q.172 What is the respective number of  $\alpha$  and  $\beta$  particles emitted in the following radioactive decay  ${}_{90}\text{X}^{200} \rightarrow {}_{80}\text{Y}^{168}$   
 (a) 6 and 8 (b) 6 and 6  
 (c) 8 and 8 (d) 8 and 6
- Q.173 In a radioactive decay, neither the atomic number nor the mass number changes. Which of the following would be emitted in the decay process?  
 (a) Proton (b) Electron  
 (c) Neutron (d) Photon
- Q.174 The half-life of radon is 3.8 days. Three fourth of a radon sample decay in  
 (a) 5.02 days (b) 7.6 days  
 (c) 15.2 days (d) 11.4 days
- Q.175 When  ${}_{90}\text{Th}^{228}$  transforms to  ${}_{83}\text{Bi}^{212}$  then the number of the emitted  $\alpha$ - and  $\beta$ -particles is, respectively  
 (a)  $8\alpha, 7\beta$  (b)  $4\alpha, 4\beta$   
 (c)  $4\alpha, 7\beta$  (d)  $4\alpha, 1\beta$
- Q.176 The mass number of a nucleus is equal to the number of  
 (a) Electrons it contains (b) Neutrons it contains  
 (c) Protons it contains (d) Nucleons it contains
- Q.177 Activity is proportional to number of  
 (a) Daughter nuclei (b) Decayed nuclei  
 (c) Undecayed nuclei (d) Father nuclei
- Q.178 The ratio of the longest and shortest wavelengths of the Lyman series is approximately  
 (a)  $4/3$  (b)  $9/5$   
 (c)  $9/4$  (d)  $16/7$
- Q.179 If momentum of a particle is doubled then de-Broglie wavelength become  
 (a) Double (b) Half  
 (c) Unchanged (d) Four times
- Q.180 The experimental value of Rydberg constant is  
 (a)  $1.097 \times 10^{-8} \text{ m}^{-1}$  (b)  $1.097 \times 10^7 \text{ m}^{-1}$   
 (c)  $1.097 \times 10^8 \text{ m}^{-1}$  (d)  $1.097 \times 10^{-7} \text{ m}^{-1}$



## SPOT THE ERROR:

In the first type of sentences, some segments of each sentence are underlined. Your task is to identify that underlined segment of the sentence, which contains the mistake that needs to be corrected.

- Q.181 The objections of my colleague for accompanying me to Head office are meaningless.  
 A) B) C) D)
- Q.182 Ali was just beginning his test when the others were finishing their.  
 A) B) C) D)
- Q.183 He set off with spring in his step and an inexpressible joy in his heart.  
 A) B) C) D)
- Q.184 In fact, she knocked my glasses to fly and they fell, though unbroken, several feet away from me on the kitchen floor.  
 A) B) C) D)
- Q.185 Before the invention of television, the radio was the chief form of at-home entertainment.  
 A) B) C) D)
- Q.186 The team leaders encourage the participants who have difficulty in performing the assigned task to them.  
 A) B) C) D)
- Q.187 She had a cleverer brain his, and he could not refute her ideas even if and when he disagreed with it.  
 A) B) C) D)
- Q.188 Three hundred years ago, famine was a periodic experience which came so regular that people accepted periods of extreme hunger as normal.  
 A) B) C) D)

## CORRECTION:

In each of the following questions, four alternative sentences are given. Choose the CORRECT one and fill the Circle corresponding to that letter in the MCQ Response Form.

Q.189

- A) "Will it be OK if I bring a friend a home for supper?" "Yes of course it will."  
 B) "Will it be OK if I bring a friend home for supper?" "Yes, of course it will."  
 C) "Will it be OK if I bring friend home for supper?" "Yes, of course it will".  
 D) "Will it be OK if I bring friend a home for supper?" "Yes, of course it will".

Q.190

- A) By the time peace and happiness will have come to the planet, many lives will be wasted.  
 B) By the time peace and happiness will come to the planet, many lives will be wasted.  
 C) By the time peace and happiness come to the planet, many lives will have been wasted.  
 D) By the time peace and happiness will have come to the planet, many lives will have been wasted.

Q.191

- A) Improvements in economic theory and data gathering have made more accurate possible forecasts than were possible 20 years ago.  
 B) Improvements in economic theory and data gathering have made more possible accurate forecasts than were possible 20 years ago.  
 C) Improvements in economic theory and data gathering have made possible accurate more forecasts than were possible 20 years ago.  
 D) Improvements in economic theory and data gathering have made possible more accurate forecasts than were possible 20 years ago.

- Q.192 They first sun-dried the garbage for one to three days to bring down the moisture level.  
(Choose the correct Passive)  
A) The moisture level of the garbage came down when it was sun-dried for one to three days.  
B) One to three days of sun-drying brought down the moisture level of the garbage.  
C) The moisture level was brought down by sun-drying the garbage for one to three days.  
D) The garbage was first sun-dried for one to three days to bring down the moisture level.

- Q.193 She said to her, "Why don't you go today?" (Change the Narration)  
A) She said to her that why she don't go today.  
B) She asked her why she did not go that day.  
C) She asked her why she did not go today.  
D) She asked her if she was going that day.

- Q.194  
A) His white hair and red uniform of the court acrobat showed each other off to the perfection.  
B) His white hairs and red uniform of the court acrobat showed one another off to the perfection.  
C) His white hair and red uniform of the court acrobat showed one another off to the perfection.  
D) His white hairs and red uniform of the court acrobat showed each other off to the perfection.

- Q.195  
A) She was lead to the scaffolds in front of a crowds of several hundred.  
B) She was lead to the scaffold in front of crowd of several hundred.  
C) She was led to the scaffolds in front of a crowd of several hundreds.  
D) She was led to the scaffold in front of a crowd of several hundred.

- Q.196  
A) He was a good athlete when he came over his wild idea at for the age of sixteen.  
B) He was a good athlete when he came for his wild idea at over the age of sixteen.  
C) He was a good athlete when he came by his wild idea at about the age of sixteen.  
D) He was a good athlete when he came across his wild idea at above the age of sixteen.

#### Sentence Completion:

Fill in the blanks with appropriate word.

- Q.197 As the state \_\_\_\_\_ to the power of the mob, German men were forcibly removed from their homes.  
A) Ventured  
B) Urged  
C) Reinforced  
D) Yielded
- Q.198 My parents had both given me puzzled look but proceeded to do their nightly \_\_\_\_\_ of either going over their case, or reading over a new fashion magazine.  
A) Nuisances  
B) Menaces  
C) Rituals  
D) Regrets

#### SYNONYMS

Choose the word that is most nearly **SIMILAR** in meaning to the word in capital letters.

- Q.199 **SUCCULENT**  
A) Luscious  
B) Lustrous  
C) Stinky  
D) Wimpy

#### ANTONYMS

Choose the word **OPPOSITE** in meaning to **CAPITALIZED** word given above.

- Q.200 **TUMULTUOUS**  
A) Cataclysmic  
B) Spasmodic  
C) Halcyon  
D) Convulsive



# MCQ'S RESPONSE FORM

	A	B	C	D
1	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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